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Request IR-1:

On Page 7 of 39 of its Report, the Brattle Group states that the Proposed Plan remains heavily weighed towards traditional energy efficiency with 90% of the total investment directed towards energy efficiency compared to 9% of the total investment in Demand Response.

(a) What percentage of program investment should be directed towards energy efficiency and what portion should be directed to Demand Response?

(b) Why are the percentages set out in paragraph A above more appropriate than the proportions in the Proposed Plan?

Response IR-1:

This IR response has been provided by The Brattle Group.

(a-b) An alternative investment allocation would be a function of the revised set of programs and accompanying design. It is not possible to determine an appropriate ratio ex ante.

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Request IR-2:

On Page 8 of 39 of its Report, the Brattle Group states that E1's reliance on the modified PAC test creates a structural barrier to Strategic Electrification because it "excludes many of the broader benefits that motivate electrification".

(a) Please identify the broader benefits that are excluded by the modified PAC test.

(b) Please explain in detail how these benefits are excluded from consideration by the modified PAC test.

Response IR-2:

This IR response has been provided by The Brattle Group.

(a-b) As explained in Section V.B.2 of the Brattle Evidence, the National Standard Practices Manual (NSPM) explains that electrification may add costs to the electric grid and can only be found cost-effective where the applicable BCA test includes relevant non-electric system impacts, including reductions in gasoline, diesel, natural gas, fuel oil, propane, and other fuels. As further explained in the Brattle Evidence, emissions benefits as a result of electrification are also not explicitly accounted in a modified PAC test due to the focus on electric system energy benefits. Excluding the benefits from reduction in other fuel consumption and avoided emissions benefits within the BCA framework will undermine the comprehensive benefits that any strategic electrification program can offer. We do, however, acknowledge that the Board's decision that E1 should use the modified PAC test to assess strategic electrification is driven by statutory requirements.

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Request IR-3:

On page 11 of 39 of its Report, the Brattle Group states that E1 does not fully explain why it costs twice as much to deliver one kWh of energy savings in Nova Scotia than in other jurisdictions.

(a) Against what jurisdictions is the Brattle Group comparing the performance of E1 in delivering energy savings.

(b) How do these jurisdictions allocate funds to create higher system value compared to the allocation proposed by the E1?

Response IR-3:

This IR response has been provided by The Brattle Group.

(a) The 2024 ACEEE report cited in the Brattle Evidence records energy efficiency cost and savings estimates from 52 of the largest US electric utilities by retail sales.¹

(b) Brattle has not conducted a detailed analysis of program design measures implemented across all the utilities recorded in the ACEEE dataset. The Brattle Evidence indicated that additional information is required to assess the criteria used to select the peer group in the APEX jurisdictional scan, including how that peer group was identified. Brattle compared E1's reliance on the APEX survey with a separate analysis by the ACEEE, a respected organization that tracks energy-efficiency performance across U.S. jurisdictions. Based on that comparison, Brattle observed that an alternative benchmark could support a different conclusion regarding E1's relative costs. Accordingly, Brattle concluded that E1's assertion that its costs are comparable based on the APEX survey is not sufficient, on its

¹ Mike Specian and Alex Aquino, *Faster and Cheaper: Demand-Side Solutions for Rapid Load Growth*, ACEEE, February 2026, Appendix C.

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1 own, to establish that the proposed costs are reasonable.

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Request IR-4:

On page 12 of 39, the Brattle Group states that the lack of commitment by E1 to Demand Response programs threatens the planned load reserve margin of Nova Scotia as system capacity for Nova Scotia gets tighter.

(a) What level of investment in Demand Response programs would be sufficient to offset pressures on the planned reserve margin?

(b) Please explain how that level of investment could be advanced while maintaining the affordability of the overall program in the short term.

Response IR-4:

This IR response has been provided by The Brattle Group.

(a) Brattle has not recommended a specific level of DR investment sufficient to offset Nova Scotia's planning reserve margin pressures, because that determination requires a new DR potential study, updated system-planning inputs, avoided-cost assumptions, customer-segment analysis, and verified estimates of achievable winter peak reduction. We understand that E1 has engaged a consultant to complete a 2026 DSM potential study to provide updated DSM potential projections to inform IESO Nova Scotia's 2026 Integrated Resource Plan (IRP).¹ E1 expects that updates will be made to this study within the 2027-2031 DSM plan timeframe to inform the 2032-2036 DSM Plan and an anticipated future IRP process led by the IESO Nova Scotia during the 2027-2031 Plan period. The scope for the update which will follow the 2026 DSM Potential Study has not been developed at this point.² Brattle's recommendation is therefore directional at this time: E1 should treat DR as a dispatchable capacity resource, not simply as a customer program; undertake a

¹ See E1 response to NSEB IR-07, part (b)(ii).

² See E1 response to IG IR-17, part (b).

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1 new DR potential study focused on winter peak value; identify the relative potential of
2 smart thermostats, domestic hot water control, BNI curtailment, and other controllable
3 loads; establish clear performance and accreditation, and continue scaling BNI DR where
4 it is cost-effective; and develop a credible residential DR strategy rather than pausing new
5 enrollment. That approach would allow E1, NS Power, IESO Nova Scotia, and the Board
6 to determine how much DR can be reliably counted toward capacity needs, what it will
7 cost to convert enrolled devices or customers into dependable capacity, and how DR
8 investment should be scaled over time to support resource adequacy and affordability.
9

- 10 (b) This goal can be achieved by maintaining short-term affordability by reallocating funds
11 within the existing DSM budget rather than increasing the overall revenue requirement. In
12 particular, E1 could shift incremental funding away from higher-cost or lower-priority
13 measures, such as energy efficiency measures, and toward DR resources that are more
14 directly tied to winter peak reduction, capacity deferral, and resource adequacy value. That
15 could include scaling cost-effective BNI DR, improving residential DR delivery using
16 lower-cost acquisition channels and device-partner models, maintaining focus on scaling
17 smart thermostats and domestic hot water control. The purpose of this approach is not to
18 spend more for its own sake, but to improve the value produced by each DSM dollar by
19 directing near-term spending toward resources that can reduce peak demand, defer future
20 capacity costs, and be measured through clear performance and cost-per-kW metrics.

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Request IR-5:

On page 13 of 39, the Brattle Group refers to an analysis of the Demand Response peak reduction capability of certain US investor-owned utilities.

(a) How many of the investor-owned utilities that are referred to are winter peaking utilities?

(b) How would the Demand Response peak reduction capability for winter peaking utilities differ from the capability in non-winter peaking utilities?

(c) What is the basis for the statement that “NS Power’s achievable DR potential is likely far higher than the levels set in the current E1 plan”?

(d) By what amount does the current E1 plan understate NS Power’s achievable DR potential?

Response IR-5:

This IR response has been provided by The Brattle Group.

(a) Seven of the 87 utilities recorded in the figure are winter peaking utilities.

(b) The primary difference with summer and winter peaking utilities as it pertains to system peak demand is the type of electric demand that contributes to the system peak. For summer utilities, this may be primarily driven by cooling load and for winter peaking utilities, it may be primarily driven by heating demand. Relatedly, demand response peak reduction capability will be a function of types of demand response programs utilities can leverage and deploy that target the biggest contributing factor to system peak demand. As such, summer peaking utilities may rely on directly controlled or passive demand response

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1 programs that aim to reduce and/or shift cooling demand away from peak periods while
2 winter peaking utilities may target programs that shift heating demand away from the peak
3 periods. The other primary difference may arise from when system peaks actually occur
4 for respective utilities, commonly late evenings for summer-peaking utilities and early
5 mornings and/or early evenings for winter peaking utilities. Notwithstanding these
6 differences in utility system characteristics, design features from demand response in
7 summer peaking jurisdictions – such as incentives, automated participation, device-partner
8 enrollment channels, customer comfort protections, and repeated event-season learning –
9 are equally applicable to DR programs in winter peaking jurisdictions.

- 10
- 11 (c) Brattle has not conducted a load flexibility potential study for Nova Scotia and we
12 understand that E1 has engaged a consultant to complete a DSM potential study to provide
13 updated DSM potential projections to inform IESO Nova Scotia's 2026 Integrated
14 Resource Plan (IRP). However, a simple comparison of E1's proposed residential DR
15 participation levels and existing heat pump saturation may elucidate on the DR potential.
16 E1's preferred plan states that annual residential customer participation is expected to be
17 roughly 22,000 through the 2027-2031 DSM Plan.¹ The DSM Plan also states that one
18 component of supporting technologies involves smart thermostats for electric baseboards,
19 mini-split heat pumps and central heat pumps. On the other hand, NS Power's 2026 Load
20 Forecast Report estimates that there will be around 15,500 new residential heat pump
21 installations per year on average for the period 2026 to 2036 (totally around 170,000 new
22 installs total by 2036). This is in addition to NS Power's estimate of 50 percent saturation
23 of electric heat pumps among residential customers as of 2026, approximately 250,000
24 customers. This difference between proposed DR program enrollment and
25 existing/projected heat pump uptake indicates that there may be vast potential to increase
26 DR penetration among the residential customer base.

27

¹ See E1 Appendix A: preferred plan, pg. 80 of 112.

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- 1 (d) Given that E1's prior potential study is from 2019, and a new DR potential study is
2 currently being developed by IESO Nova Scotia, Brattle does not have the sufficient
3 information to answer this question.

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Request IR-6:

With reference to page 14 of 39 of the Report, how will the exclusion of residential customers from any growth in Demand Response capacity affect the nature and character of the Demand Response program?

Response IR-6:

This IR response has been provided by The Brattle Group.

Excluding residential customers from any growth in DR capacity would change the nature and character of the DR program from a diversified, scalable demand-side capacity resource into a narrower program that relies almost entirely on BNI customer curtailment for incremental MWs. As discussed on page 14 of the Brattle Evidence, the Preferred Plan would add no new residential customers, allow residential participation to decline over time, and rely on only limited BNI customer growth for additional capacity. That approach reduces customer-class diversification, leaves potentially important residential winter peak resources such as smart thermostats and domestic hot water control underdeveloped, and increases reliance on a smaller number of larger customers for event performance. In Brattle's view, this makes the DR portfolio less robust, less scalable, and less aligned with Nova Scotia's future system needs, particularly as electrification of space heating, water heating, and transportation increases the importance of flexible residential load.

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Request IR-7:

On page 16 of 39 of its Report, the Brattle Group states that there may be opportunities for reduction in the cost of the implementation of Residential Demand Response programs if E1 learned from their prior challenges, improved their administration of the DR program and followed best practices and lessons learned from other utilities with more robust established DR programs.

Please explain this statement, in particular:

(a) What “prior challenges” could E1 learn from?

(b) How could E1 improve the administration of its DR program?

(c) What best practices and lessons learned by other utilities could E1 apply to its DR program?

Response IR-7:

This IR response has been provided by The Brattle Group.

(a) E1 identifies several administration challenges with its DR programs:

- **Slow early ramp-up:** Demand response was introduced as a new program in 2023 after piloting DR offerings at a smaller scale, and E1 reports that available DR capacity reached only 42 percent of the 2023–2026 target through 2025, reflecting a slow ramp-up.¹

¹ EfficiencyOne, *EfficiencyOne 2027–2031 DSM Resource Plan Application*, March 31, 2026, Appendix A, p. 3 of 112.

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- 1 • **BNI participant drop-outs and event opt-outs:** In the 2023/2024 season, BNI DR
2 results were affected by participant drop-out and operational constraints, including
3 customers withdrawing or opting out of events because of operational requirements
4 at the time of curtailment.²
5
- 6 • **Residential hot water controller issues:** E1 moved the domestic hot water direct
7 load control pathway from pilot to permanent offering, but it was initially run on a
8 small scale; in Q2 2023, E1 decided to recall and remove all installed controllers
9 for quality reasons before the next season.³
10
- 11 • **Ongoing residential pathway disruptions and low adoption:** In 2024, the
12 residential DR program was affected by the continued pause of the domestic hot
13 water pathway while replacement controllers were pending, along with lower-than-
14 expected adoption of Eco Shift devices such as smart thermostats, EV telematics,
15 and chargers.⁴
16
- 17 • **Continued underperformance in 2025:** DR results again fell short of the available
18 capacity target in 2025 because residential participation was below expectations
19 and BNI customers opted out, partly due to limited advance notice of events.⁵
20
- 21 • **Narrowing of pursued pathways and need for corrective actions:** Several
22 originally modelled DR pathways were not pursued from 2023-2025, including
23 behavioural residential DR, BNI smart thermostat direct load control, BNI domestic
24 hot water control, battery control, and dynamic pricing with enabling technologies.
25 In response, E1 added measures such as event-ready device checks, targeted Eco
26 Shift marketing, better BNI customer engagement, longer event notice, automated

² Id., p. 8 of 112.

³ Ibid

⁴ Ibid

⁵ Id., p. 9 of 112.

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1 event reporting, independent metering, and a new aggregator with better metering
2 and real-time insights.⁶

- 3
4 (b) E1 should ensure that enrolled devices are event-ready, reliable, and capable of being
5 measured before counting them as available capacity. This is particularly important given
6 the prior quality issues with domestic hot water controllers and lower-than-expected
7 adoption of smart thermostats, EV telematics, and chargers.

8
9 For residential DR, E1 should use more targeted marketing to existing and prospective Eco
10 Shift participants, simplify enrollment, focus on technologies with demonstrated winter
11 performance, and track and report attrition, opt-outs, device connectivity, and event
12 participation. For BNI customers, E1 should continue enhanced customer engagement, pre-
13 event coordination, and clearer expectations around event participation.

14
15 E1 should maintain longer advance notice for events, improve communication protocols,
16 and continue using automated event reporting so customers and program administrators
17 can quickly understand event performance. E1's move from 16-hour to 48-hour advance
18 notice and automated participation reporting are good examples of the type of operational
19 improvements that should be continued.

20
21 E1 should prioritize BNI DR and other pathways that show repeatable performance, while
22 using the residential program more deliberately to optimize existing assets and test high-
23 value controllable loads, and improve cost-effectiveness. Over time, E1 should use
24 measured performance, cost per verified kW, and customer participation data to decide
25 which DR pathways should be scaled.

⁶ Ibid

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1 (c) E1 would need to undertake its own research and outreach to other jurisdictions for
2 successful best practices; however, we list some of the best practices below based on our
3 own work:

- 4 • **Use device partners and OEM channels to reduce customer-acquisition costs:**
5 IESO's Peak Perks program scaled quickly by working through smart-thermostat
6 platforms and device partners; IESO reported more than 200,000 enrolled
7 participants by January 2025. E1 could apply this lesson by relying less on general
8 customer marketing and more on manufacturer, installer, aggregator, and "bring-
9 your-own-device" channels for thermostats, water-heater controls, EV chargers,
10 and batteries.
11
- 12 • **Improve customer experience and maintain customer control:** Leading
13 residential DR programs typically make enrollment simple, provide clear
14 incentives, notify customers before events, and allow customers to opt out or
15 override events. Eversource's ConnectedSolutions thermostat program, for
16 example, describes temporary thermostat adjustments of up to four degrees while
17 customers are rewarded for reducing peak demand. For E1, this means providing
18 customers with sufficient notice, limiting customer discomfort, and designing
19 incentives around sustained participation rather than one-time enrollment.
20
- 21 • **Refine baselines methods and event analytics early:** Several jurisdictions have
22 found that early DR impacts can be noisy and require better baseline methods. For
23 instance, PG&E's smart thermostat pilot evaluation focused on enrollment, load
24 impacts across thermostat brands, and the effect of temperature-based control
25 strategies. Massachusetts' Wi-Fi thermostat DR participation study was designed
26 to support improvements in marketing, outreach, databases, and collaboration with
27 OEMs, vendors, and other programs. E1 should similarly treat early seasons as a
28 learning period and use event data to refine baselines, dispatch strategies, and
29 technology-specific performance assumptions.
30

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- 1 • **Prioritize winter-relevant controllable loads:** Because Nova Scotia is winter-
2 peaking, E1 should focus on continued growth for resources with winter peak value,
3 including electric resistance backup heating, smart thermostats in electrically
4 heated homes, domestic hot water control, thermal storage, , and BNI curtailment.
5 The Northwest Power and Conservation Council notes that residential water-heater
6 DR can reduce event-hour demand by pre-heating, changing setpoints, preventing
7 resistance-element operation in heat pump water heaters, or interrupting heating
8 elements, making it a relevant winter flexibility resource for E1 to revisit with better
9 technology quality assurance.
10
11 • **Other utilities' experience suggests that early DR programs often require**
12 **several seasons to stabilize program administration and customer**
13 **communications:** E1 should therefore focus near-term growth on the BNI and
14 residential pathways with demonstrated performance, while continuing to explore
15 viable program opportunities with less mature resources such as water-heater
16 control, EV charging, batteries, and locational DR. The goal should be to convert
17 enrolled customers into dependable, accredited winter capacity before committing
18 to broader expansion.

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Request IR-8:

On page 19 of 39, the Report states "E1's current residential DR design is too limited, too expensive and too passive in its approach to program development".

(a) Please explain this statement.

(b) Please explain how residential DR programs can become an increasingly important systems resource without imposing challenges for affordability in the immediate term.

Response IR-8:

This IR response has been provided by The Brattle Group.

(a) This statement is a summary of Brattle's analysis of E1's program in that:

- It proposes no new residential enrollment for the 2027-2031 plan term.
- The cost of the program is high relative to other jurisdictions that offer demand response programs, covered in Figure 3 of the Brattle evidence.
- E1 proposes to pause further enrollment in residential DR with the expectation that DR will become cost effective in the future.

(b) Brattle's evidence supports treating residential DR as a resource that can become increasingly important as Nova Scotia's winter peak grows and electrification adds more flexible load, but only if it is developed in a disciplined and affordable way. Brattle is not recommending broad near-term spending increases or unchecked residential DR expansion; rather, it recommends improving program design, using the new DSM potential study currently being developed by E1 and its chosen consultant to identify the highest-value winter peak resources, focusing on controllable loads such as smart thermostats and

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1 domestic hot water control, improving customer acquisition and device-partner delivery
2 models, and measuring verified event performance, opt-outs, attrition, device health, and
3 cost per dependable kW. This approach would allow E1 to preserve and improve residential
4 DR as a future system resource while protecting short-term affordability by limiting
5 spending, using phased deployment, reallocating funds toward higher-value DSM
6 opportunities, and scaling only those DR pathways that demonstrate reliable winter
7 capacity value.

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Request IR-9:

On page 25 of 39, the Report states that it is very unlikely that a Strategic Electrification program could pass the modified PAC test that has been adopted by the Board. In table 2, page 26 of 39, the Report shows that Strategic Electrification could meet the modified PAC test if it increased Utility revenues enough to offset all the other costs introduced by the program.

(a) What are the implications of this for the implementation of Strategic Electrification as part of the DSM program?

(b) Could the modified PAC test be altered or applied so that it was not a barrier to the inclusion of Strategic Electrification in E1's DSM program?

(i) If so, how could the modified PAC test be altered or applied so that it was not a barrier to the inclusion of Strategic Electrification?

(c) What non-electric system impacts of Strategic Electrification are overlooked by the Application of the modified PAC test.

Response IR-9:

This IR response has been provided by The Brattle Group.

(a) The implication is that it will be exceedingly difficult for Strategic Electrification programs, especially those that add electric demand and not simply shift existing electric demand away from system peak hours, to pass the cost-effectiveness requirements for the existing modified PAC framework.

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1 (b) An alteration to the modified PAC test used to assess strategic electrification could include
2 the benefits related to reduction in other fuels and a monetization of overall emissions
3 benefits. However, depending on the inclusion of one or both of those impacts, the test may
4 move closer to a Total Resource Cost (TRC) or Societal Cost Test (SCT) and away from a
5 traditional or modified PAC test framework. We also acknowledge, in its Decision on E1's
6 Benefit-Cost Analysis Test Application (M12282), the Board provided the following:

8 The Board does not have the authority to evaluate the cost-effectiveness of
9 proposed demand-side management under s. 79H or s. 79L using impacts
10 unrelated to those directly reflected in electricity costs for customers.

11 //

12 The proposed BCA test includes non-utility system impacts. Given the
13 Board's findings that the purpose of the demand-side management
14 provisions in the Public Utilities Act is to reduce electricity costs for
15 customers and that it does not have the authority to evaluate the cost-
16 effectiveness of proposed demand-side management under s. 79H or s. 79L
17 using impacts unrelated to those directly reflected in electricity costs for
18 customers, the proposed BCA test cannot be used in the screening
19 assessment of DSM plans.¹

20
21 (c) Please refer to CA IR-2 part (a).

¹ M12282 – Board Decision, 326339, para. 142 and 152. December 10, 2025.

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Request IR-10:

On page 30 of 39, the Report recommends that E1 be required to develop a “Strategic Electrification pathway” that satisfies the statutory requirement to reduce both electricity costs and GHG emissions.

(a) Is such a pathway achievable during the life of DSM Plan?

(b) What measures and in what priority would create such a pathway?

Response IR-10:

This IR response has been provided by The Brattle Group.

(a) Possibly. As explained in Section V.B.1 of the Brattle Evidence, E1's own admissions point to potential data quality issues that may confound the representativeness of value offered by strategic electrification programs. E1 should identify if those issues affect cost-effectiveness and look to obtain more representative data that may improve cost-effectiveness outcomes and develop a phased SE pathway that identifies candidate measures with stronger cost-effectiveness potential within this DSM term. On page 35-36 of the 2027-2031 DSM Resource Plan Application Evidence, E1 notes that it has allocated investment within its Enabling Strategies budget specifically for strategic electrification development and research and will report annually on strategic electrification research activities and findings as part of its Annual Progress Reports. That at least suggests that E1 will be able to study program design and performance on an annual basis and propose a phased in plan for SE programs that are competitive. Furthermore, given the constraints of the existing modified PAC framework, E1 should explore programs that are designed around flexibility such that they reduce system peak impacts. Managed EV charging and direct control electric water heat programs may be alternative measures for E1 to explore. However, as we noted in the Evidence, the current modified PAC presents a very high bar

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1 to clear for cost-effectiveness, therefore E1 may not be able to identify cost-effective
2 programs despite undertaking the actions discussed here.

3
4 (b) Brattle has not conducted a redesign of E1's DSM portfolio and therefore is unable to
5 provide a definitive pathway for program design at this time.